REMARKS

This is being filed in response to the Official Action dated November 30, 2004.

Claims 40, 41, and 127 have been allowed. Claims 45, 54, 57, 59, 62, 63, 70, 78, 80, 81, 88, 123, 126, 128 and 140-180 stand rejected.

Applicants herein cancel claims 126, 128, 170 and 171 without prejudice and without disclaimer as to the subject matter thereof.

Applicants herein amend claims 54, 57, 63, 70, 81, 123, 141, 142, 147, 156-158, 172, and 176.

Applicants acknowledge, with appreciation, that the Examiner has withdrawn the objection raised in paragraph 6 of the previous office action as containing new matter. The Applicants also acknowledge that the Examiner has withdrawn the rejection raised in paragraphs 13, 14, 15(b), 15(c), 15(d), 15(e), 17, 18, 19, 21, 22, and 23 of the previous office action. The Examiner also notes that the rejection of claims 47, 56, 124, 125 is now moot.

Rejections Maintained from Previous Action

A. 35 U.S.C. §112, second paragraph

Claim 57 was rejected as indefinite. Without conceding the correctness of the Examiner's position, Applicants herein amend claim 57 to recite that the first polypeptide comprises at least 11-15 contiguous amino acids. Thus, as the sequence may contain SEQ ID NO:10 (a 5 amino acid fragment) or SEQ ID NO:9 (a 12 amino acid fragment), the claim language is definite. Support for the amendment may be found, for example, in the specification at page 14, lines 21-30. Thus, no new matter is added, and the scope of the claim would be clear and sufficiently definite to one of skill in the art.

Claims 59 and 164-166 are viewed as sufficiently definite upon amendment of claim 57.

B. 35 U.S.C. §102(e)(2) over U.S. Patent No. 5,403,924 to Cover *et al.*

The Office Action maintains the rejection of claims 126 and 128 under 35 U.S.C. §102(e)(2) as anticipated by U.S. Patent No. 5,403,924 to Cover *et al.* ("Cover I"). This rejection is now moot in view of the cancellation of claims 126 and 128.

C. 35 U.S.C. §102(b) over Covacci *et al.* (1993) *Proc. Natl. Acad. Sci. USA* 90:5791-5795

The Office Action maintains the rejection of claims 45, 54, 62, 68, 78, 81, 88, 123, 126 and 128 under 35 U.S.C. §102(b) as anticipated by Covacci *et al.* (1993) *Proc. Natl. Acad. Sci. USA* 90:5791-5795 ("Covacci"). Applicants respectfully traverse.

As Applicants discuss below, the subject matter of claims 45, 54, 62, 68, 78, 81, 88, and 123 were clearly disclosed by the Italian priority document which is incorporated by reference in the instant specification. The recitation of the amino acid numbers and nucleic acid numbers from the SEQ ID NOs assigned in the instant specification represents convenient shorthand for what was originally, clearly disclosed. No new matter is added and such would be apparent to one of skill in the art. Applicants earnestly submit that the claims are clearly entitled to priority of the earlier Italian priority document and that Covacci does not qualify as prior art. Withdrawal of the rejection is urged.

Applicants further note that the rejection as applied to claims 126 and 128 is moot in view of the cancellation of these claims.

New Rejections

A. 35 U.S.C. §101

As suggested by the Examiner, Applicants herein amend claims 54, 141, 142 and 147 to include the feature that the polypeptides of the compositions are purified. Support for the amendment may be found, for example at page 16, lines 19-22. No new matter is added. Applicants submit that claims 54 and 141-152 now sufficiently distinguish over a naturally occurring polypeptide of *H. pylori* as was originally intended by the claims. Withdrawal of the rejection under 35 U.S.C. §101 is respectfully requested.

B. 35 U.S.C. §112, first paragraph (New Matter)

The Examiner rejects claims 45, 54, 62, and 81 and claims 68, 78, 88, dependent therefrom, and new claims 141, 142, 147, 154 and 159 and those dependent therefrom as having new matter with the recitation of a polypeptide comprising amino acids 750-977 of SEQ ID NO:5.

Applicants note that the Italian priority document was incorporated by reference in the opening paragraph of the specification. In the Italian document, claim 2 claims a polypeptide comprising an amino acid sequence shown in three letter code. This sequence corresponds to amino acids 750-977 of SEQ ID NO:5 of the present specification. Therefore, there is adequate support in the priority document for the claims, and through incorporation by reference, the instant specification. One of skill in the art can easily see that the sequence shown in the Italian priority document corresponds to a portion of the sequence of SEQ ID NO:5. It is simply a pragmatic way to express the idea of a polypeptide comprising the sequence that was shown in the earlier priority document and does not constitute new matter. Withdrawal of the rejection is respectfully requested.

The Examiner rejects claim 123 as having new matter with the recitation of a polynucleotide comprising nucleotides 2782-3466 of SEQ ID NO:4.

Applicants note that the Italian priority document was incorporated by reference in the opening paragraph of the specification (added by preliminary amendment with the application at the time of filing). In the Italian document, claim 3 claims a polypeptide expressed by a gene which contains the nucleic acid sequence shown in single letter code. This sequence corresponds to amino acids 2782-3466 of SEQ ID NO:4 of the present specification. Therefore, there is adequate support in the priority document for the claim 123, and through incorporation by reference, the instant specification. One of skill in the art can easily see that the sequence shown in the Italian priority document corresponds to a portion of the sequence of SEQ ID NO:4. It is simply a pragmatic way to express the idea of a polynucleotide comprising the sequence that was shown in the earlier priority document and does not constitute new matter. Withdrawal of the rejection is respectfully requested.

C. 35 U.S.C. §112, second paragraph

Applicants have requested cancellation of claims 126 and 128. Therefore, the rejection of these claims is now moot.

The Office Action rejects claims 156-158 as indefinite in reciting dependency from a composition claim when the base claim is a method claim. Applicants herein amend claims 156-158 to properly depend from the base method claim.

The Applicants have addressed the rejection of claims 164-166 by amending claim 57 as discussed above.

The Office Action rejects claims 63, 70, 170, 172, and 176 as indefinite for reciting a minimum length polypeptide having a sequence which is longer than 10 amino acids. Without conceding the correctness of the Office Action, the Applicants herein amend claims 63, 70, 172, and 176 to recite that the minimum length of the polypeptide is 11-15. Support for the amendment may be found, for example at page 14, lines 21-30. Thus, no new matter is added and the scope of the claims is sufficiently clear and definite to one of skill in the art. Applicants have canceled claim 170, mooting the rejection as to this claim.

D. 35 U.S.C. §102(e)(2) over U.S. Patent No. 5,900,372 to Figura *et al.* as evidenced by U.S. Patent No. 5,866,375 to Figura *et al.*

The Office Action rejects claims 54, 81, 88, 123, 126, 128 and 141-152 as anticipated by U.S. Patent No. 5,900,372 to Figura *et al.* ("Figura I") as evidenced by U.S. Patent No. 5,866,375 to Figura *et al.* ("Figura II").

The Examiner notes that the polypeptide having the recited amino acids of SEQ ID NO:5 with or without the amino acid sequence of SEQ ID NO:6 or SEQ ID NO:3 as recited in claims 54 and 141-152 are not required to be isolated or purified, and claims 81 and 123 do not require that the polypeptide is purified. Applicants hereby amend claims 54, 81, 123, 141, 142 and 147 to incorporate the feature that the polypeptides are purified, as was originally intended. Claims 88, 143-146 and 148-151 are dependent on the amended claims. Claims 126 and 128 have been canceled, mooting the rejection as to these claims. Support for the amendment may be found, for example in the specification at page 16, lines 19-22. As Figura discloses compositions comprising bacterial cells or cell lysates and does not teach isolation and purification of the cytotoxin proteins, Figura does not anticipate the claims. Withdrawal of the rejection under 35 U.S.C. 102(e)(2) is respectfully requested.

E. 35 U.S.C. §102(e)(2) over U.S. Patent No. 5,403,924 to Cover *et al.* as evidenced by Harlow *et al.* (ANTIBODIES: A LABORATORY MANUAL)

The Office Action rejects claims 170 and 171 as anticipated by U.S. Patent No. 5,403,924 to Cover *et al.* ("Cover I") as evidenced by Harlow *et al.*, ANTIBODIES: A

LABORATORY MANUAL, Cold Spring Harbor Laboratory, Ch. 5, p. 76, 1988 ("Harlow"). Applicants have canceled claims 170 and 171, mooting the rejection as to these claims.

F. 35 U.S.C. §103(a) over U.S. Patent No. 5,403,924 to Cover *et al.* and Dunn *et al.* (1992) *Infect. Immunity* 60:1946-1951 or Evans *et al.* (1992) *Infect. Immunity* 60:2125-2127 in view of Hirschl *et al.* (*HELICOBACTER PYLORI*, GASTRITIS AND PEPTIC ULCER)

The Office Action rejects claims 57, 59, 63, 140, 172-174 and 180 as anticipated by U.S. Patent No. 5,403,924 to Cover *et al.* ("Cover I") and Dunn *et al.* (1992) *Infect. Immunity* 60:1946-1951 ("Dunn") or Evans *et al.* (1992) *Infect. Immunity* 60:2125-2127 ("Evans") in view of Hirschl *et al.* (***HELICOBACTER PYLORI*, GASTRITIS AND PEPTIC ULCER**), Malfertheiner *et al.* Springer-Verlag, Berlin Heidelberg, 141-146, 1990 ("Hirschl"). Applicants respectfully traverse.

The Office Action's obviousness rejection hinges mainly on Hirschl providing the motivation to combine antigens. However, Hirschl teaches that there are three categories of antigens: (a) whole cell antigens, (b) partially purified antigens, and (c) highly purified antigens (Hirschl, page 142, under "*H. pylori* Antigens for ELISA"). Hirschl notes that highly purified antigens have suboptimal sensitivity and produce a large number of false negatives. Thus one would be motivated not to use highly purified antigens, that is, Hirschl teaches away from the use of highly purified antigens. However, as the Examiner notes, Hirchl teaches that "interesting results" were found when a highly purified antigen was combined with a partially purified preparation. Inspection of what a partially purified antigen is reveals a fairly crudely fractionated cell lysate (centrifuged cell sonicate and acid glycine extracts). Thus, Hirschl does not teach the combination of "purified" polypeptides as instantly claimed. In fact, Hirschl leads the skilled artisan away from purifying antigens for fear of losing sensitivity. There is no motivation to combine purified antigens with any reasonable expectation of success. Hirschl would lead one to predict *failure*. Thus, the hypothetical combination of Cover I, Dunn, Evans and Hirschl fails to render the claims obvious. Withdrawal of the rejection is respectfully requested.

G. 35 U.S.C. §103(a) over U.S. Patent No. 5,403,924 to Cover *et al.* and U.S. Patent No. 6,054,132 to Cover in view of Hirschl *et al.* (*HELICOBACTER PYLORI*, GASTRITIS AND PEPTIC ULCER)

The Office Action rejects claims 70, 80, 167, 168, and 176-178 as anticipated by U.S. Patent No. 5,403,924 to Cover *et al.* ("Cover I") and U.S. Patent No. 6,054,132 to Cover ("Cover II") in view of Hirschl *et al.* (***HELICOBACTER PYLORI*, GASTRITIS AND PEPTIC ULCER**), Malfertheiner *et al.* Springer-Verlag, Berlin Heidelberg, 141-146, 1990 ("Hirschl"). Applicants respectfully traverse.

As discussed above, the Office Action's obviousness rejection hinges mainly on Hirschl providing the motivation to combine antigens. However, Hirschl teaches that there are three categories of antigens: (a) whole cell antigens, (b) partially purified antigens, and (c) highly purified antigens (Hirschl, page 142, under "*H. pylori* Antigens for ELISA"). Hirschl notes that highly purified antigens have suboptimal sensitivity and produce a large number of false negatives. Thus one would be motivated not to use highly purified antigens, that is, Hirschl teaches away from the use of highly purified antigens. However, as the Examiner notes, Hirchl teaches that "interesting results" were found when a highly purified antigen was combined with a partially purified preparation. Inspection of what a partially purified antigen is reveals a fairly crudely fractionated cell lysate (centrifuged cell sonicate and acid glycine extracts). Thus, Hirschl does not teach the combination of "purified" polypeptides as instantly claimed. In fact, Hirschl leads the skilled artisan away from purifying antigens for fear of losing sensitivity. There is no motivation to combine purified antigens with any reasonable expectation of success. Hirschl would lead one to predict *failure*. Thus, the hypothetical combination of Cover I, Cover II and Hirschl fails to render the claims obvious. Withdrawal of the rejection is respectfully requested.

Conclusion

Applicants earnestly submit that the claims are in condition for allowance, which action is respectfully requested.

Respectfully submitted,

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Patrick J. Farley, Ph.D.
Registration No. 42,524

Woodcock Washburn LLP
One Liberty Place - 46th Floor
Philadelphia PA 19103
Telephone: (215) 568-3100
Facsimile: (215) 568-3439